

PATENT SPECIFICATION

764,749



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COMPLETE SPECIFICATION

Couplings for use with Lubrication Nipples

We, TECALEMIT LIMITED, of Great West Road, Brentford, Middlesex, a British Company, do hereby declare the invention, for which we pray that a patent may be granted to us, and the method by which it is to be performed, to be particularly described in and by the following statement:—

The present invention relates to improvements in, or modifications of, the invention described and claimed in the specification filed with our Patent Application No. 726,484, that is to say an arrangement for coupling a coupler having an injector with a lubricating nipple, which latter is of the type comprising a member of deformable resilient material provided with an axial passage normally kept closed by the resiliency of the material, the arrangement being characterised in that the member of deformable resilient material is shaped so as to form a centralising means which is adapted to guide the end or tip of the injector, or of the coupler or part thereof in which the injector is arranged, in such a manner as to bring the injector tip near to the inlet orifice of the said passage, and the arrangement being further characterised in that the said axial passage is of such a length that it acts to embrace and to form a lubricant-tight seal with a substantial proportion of the effective length of the end or tip of the injector when the end or tip is inserted through the passage.

In the said specification there has been described an arrangement for coupling a coupler for the lubrication of various members using a nipple having a metallic body in which a member of resilient deformable material is housed, the member being formed with an axial slit which is normally closed by the resiliency of its material and is of non-measurable width. The member has a centering cup or tunnel providing a guide for the injector tip of the lubricant pump.

It is indicated with reference to Figs. 3 to 5 of French Patent Specification No. 988,711 filed on the 9th June, 1949, with claim to the priorities of two United Kingdom British Patent Applications Nos. 1847/48 (Patent No. 638,900) and 24383/48 (Patent No. 50,670,080) filed on the 8th July and 16th September, 1948, and having as its title "Coupling device for the lubrication of various members under pressure," that the slit forming the channel for the passage of lubricant can be in the form of a line, as shown in Fig. 3, or can be of star form with three or more radial arms, as shown in Figs. 4 and 5. In these three cases, however, the slits are preferably knife-cut (not shown) in such a manner as not to leave any measurable width.

In the said Specification No. 726,484 it is stated that the cup of the member of resilient material is covered, with the object of protection, by a metallic member fixed by locking or crimping on the metallic body of the nipple.

Experiments carried out at that time have demonstrated that, when the locking or crimping of the metallic nipple upon the member of resilient material was carried out without the addition of the metallic protecting member, the member of resilient material could be ejected under the effect of the back pressure when the coupler was removed after a lubricating operation.

It has been recognized that this inconvenience arose from the "Shore" degree of the resilient material used, the latter having to be of small hardness so as to permit a resilient deformation sufficiently considerable to allow the passage of the lubricant through the slit of a non-measurable width under the pressure of the pump or compressor.

After the lubricating operation, under the effect of the back pressure, the insufficiently hard resilient material tended to extrude around the said crimping or locking and immediately or after a long or short use, the

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member of resilient material was ejected from the metallic body of the nipple.

The object of the present invention is to make the nipple in such a manner that the back pressure, after lubrication, can no longer cause the extrusion or the ejection of the member of resilient material, and in such a manner as to make possible the direct crimping or locking of the said member in the metallic body, thus allowing the metallic covering element, that is to say, the metallic centralising cup to be eliminated.

A nipple according to the present invention is characterised in that the member of resilient material is made by means of elements constituted of two different materials of different hardness, that is to say:

(1) An element made of material having a degree of hardness which is relatively small and in which a passage of non-measurable width is pierced, the resilient deformation inherent to that material ensuring the passage of the lubricant even under a relatively low pressure.

(2) One or more elements made of a second material having a higher degree of hardness and constituting one or more rings opposing the ejection or the extrusion of the element of the more deformable material under the effect of the back pressures, these latter being exerted under a shoulder provided to this end in the metallic body; the element of more flexible material and the rings of material of a greater hardness forming an inseparable whole or unit obtained by a moulding operation.

The coupling device can also be formed by the aid of the element of material of little hardness and of one or more other elements of material of greater hardness, independent of each other.

The invention will be better understood by reference to the annexed drawing in which three constructional forms are shown by way of example and in which:—

Fig. 1 shows, in axial section, a nipple made in accordance with the invention; and

Figs. 2 and 3 show constructional modifications also in axial sections.

Referring to the drawings:

The nipple shown in Fig. 1 comprises a hollow metallic body 1 having a shank 2 formed for fixing the nipple on the member to be lubricated and a member 3 of resilient deformable material (rubber, for example) formed with a normally closed axial slit 4 of a non-measurable width.

The member 3, which is only slightly hard, is formed by moulding with a sleeve 5 (rubber, for example) of a greater hardness which surrounds the member 3 having the slit 4 of non-measurable width, the assembly 3-5 being conveniently locked or crimped in the metallic body 1 of the nipple as shown at 6. It will be understood that the assembly 3-5

should form an inseparable whole.

It will easily be understood that the sleeve 5, which is of a hardness suitable for eliminating the risk of extrusion or ejection under the effect of the back pressure, is arranged in the first place in the bottom of the mould before the putting into position of the resilient deformable material 4 of least hardness to constitute the part in which there will be formed the axial slit of non-measurable width. The moulding operation is carried out in known manner and does not fall within the scope of the invention.

The metallic body 1 of the nipple shown in Fig. 2 has at its upper end an internal shoulder 7 and the member 3 of least hardness is integral with a ring 8 of greater hardness, by which it is supported against the internal shoulder 7. The assembly 3-8 is held in position by a locking or crimping means 9 provided at the lower end of the nipple body in the extension of the shank 2 which is shaped for fixing on the member to be lubricated.

The member 3 of least hardness shown in Fig. 3 is arranged between two rings 10 and 11 of a material of greater hardness arranged respectively one at the top and the other at the bottom of the member 3. In this construction, the device is formed of three independent parts juxtaposed in a simple manner and fixed by locking or crimping of the metallic body 1 of the nipple.

What we claim is:—

1. An improvement in, or modification of, the arrangement described and claimed in our prior Specification No. 726,484 in which the nipple comprises a member of deformable resilient material, which is locked in the metallic body of the nipple and is formed by means of elements constituted of two materials of different hardness.

2. An arrangement as claimed in Claim 1, wherein the said member of flexible material is made up of an element formed of a material of little hardness in which there is formed a normally closed passage or slit of non-measurable width, the resilient deformation inherent to the material of little hardness ensuring the flow of the lubricant through the passage or slit even under a relatively small pressure, and one or more elements formed of a material of a greater hardness, the element of a greater hardness opposing the ejection or extrusion from the nipple of the element made of the more deformable material under the effect of back pressures which are exerted on a shoulder provided in the metallic body of the nipple.

3. An arrangement as claimed in Claim 2, wherein the element made of the material of the more deformable material is surrounded by a sleeve made of the material of a greater hardness.

4. An arrangement as claimed in Claim 2, 130

wherein the element made of the material of the more deformable material is surrounded in part by a ring which is made of the material of greater hardness and is fitted under the internal shoulder in the nipple body.

5. An arrangement as claimed in Claim 2, wherein the element made of the more deformable material is fitted in the nipple body between an outer ring made of the material of greater hardness and an inner ring also made of the material of greater hardness, the outer ring being fitted against an internal shoulder in the nipple body and the inner ring fitting against the crimped or inwardly turned inner end of the shank of the nipple.

6. An arrangement as claimed in any of the preceding Claims 2 to 5, wherein the element made of the more deformable material and the, or each, element made of the harder material together form an inseparable whole

or unit obtained by a moulding operation.

7. An arrangement as claimed in any of the preceding Claims 2 to 5, wherein the member of flexible material is made up of an element made of material of little hardness and one or more other elements made of a harder material independent of each other.

8. Improvements in, or modifications of, the arrangement described and claimed in our prior Specification No. 726,484, substantially as described with reference to Fig. 1 or Fig. 2 or Fig. 3 in the accompanying drawing.

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Fig. 1.

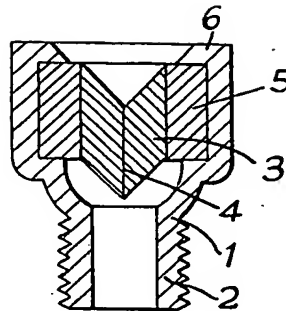


Fig. 2.

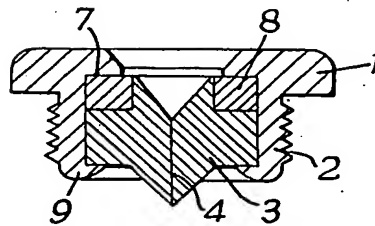


Fig. 3.

